REDACTED VERSION

EXPANDED SITE INSPECTION WORK PLAN
Phase 1 Soil Gas Study
WEST CENTRAL AVENUE, ALBUQUERQUE
CERCLIS ID # NMN000607372
BERNALLIO COUNTY, NEW MEXICO

July 2016

New Mexico Environment Department
Ground Water Quality Bureau
Superfund Oversight Section

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Acronyms that may be used in this Document

Acronym	Description
ABCWUA	Albuquerque Bernalillo County Water Utility Authority
amsl	above mean sea level
ATD	Automated Thermal Desorption (GCMS)
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylenes
btoc	below top of casing
BTP	Bell Trading Post
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CGI	combustible gas indicator
GCS	Gas Chromatography System
cis-1,2-DCE	cis-1,2-dichloroethene
City	City of Albuquerque
CLP	Contract Laboratory Program
COPC	contaminant of potential concern
CRQL	contract required quantitation limit
EDB	1,2-dibromoethane
EDC	1,2-dichloroethane
EPA	U.S. Environmental Protection Agency
ESA	environmental site assessment
ESC	ESC Lab Sciences
ESB	Environmental Services Branch
ESL	environmental screening level
ESI	expanded site inspection
FAP	Fruit Avenue Plume Superfund Site
FD	field duplicate
FHDC	Family Housing Development Corporation
ft	feet or foot
ft2	square feet
ft3	cubic feet
gal	gallons
gal/min	gallons/minutes
GCMS	gas chromatograph/mass spectrometer
GCS	Gas Chromatography System
GWQB	Ground Water Quality Bureau
HRS	Hazard Ranking System
ID	identification number
IDW	investigation-derived waste
INTERA	INTERA Incorporated

Acronym	Description
µg/m3	microgram per cubic meter
µg/L	microgram per liter
mg/kg	milligram per kilogram
mL/minute	milliliter per minute
MDL	method detection limit
MS/MSD	matrix spike and matrix spike duplicate
MSA	Minimum Site Assessment
msl	mean sea level
MTBE	methyl-t-butyl ether
MCL	maximum contaminant level
NOAA	National Oceanic Atmospheric Administration
NMED	New Mexico Environment Department
NMWQCC.	New Mexico Water Quality Control Commission
OSE	New Mexico Office of the State Engineer
PA	Preliminary Assessment
P&A	plug and abandoned
PCE	tetrachloroethene
PID	photoionization detector
PPE	personal protective equipment
PRT	Post-Run Tubing
PSG	passive soil gas
PSTB	Petroleum Storage Tank Bureau (New Mexico Environment Department)
QA/QC	quality assurance and quality control
QAPP	quality assurance project plan
RA	remedial action
RCRA	Resource Conservation and Recovery Act
RL	reporting limit
RPD	relative percent difference
RSL	regional screening level
SAP	sampling and analysis plan
SCDM	Superfund Chemical Data Matrix
SI	Sight Investigation
Site	West Central Avenue, Albuquerque, New Mexico
SIM	Select Ion Monitoring
SG	soil gas
SJC	San Juan Chama Drinking Water Project
SOS	Superfund Oversight Section
SOP	standard operating procedure
SSL	soil screening level
TCE	trichloroethene
trans-1,2-DCE	trans-1,2-dichloroethene

Acronym	Description
UST	underground storage tank
VC	vinyl chloride
VISL	vapor intrusion screening level
VOC	Volatile organic compound
WCA	West Central Avenue

1.0 Introduction

Under the authority of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), as amended, 42 United States Code (U.S.C.) §§ 9601 to 9675 (CERCLA), the New Mexico Environment Department (NMED) Superfund Oversight Section (SOS) is conducting an Expanded Site Inspection (ESI) of the West Central Avenue site (the Site) in Albuquerque, Bernalillo County, New Mexico (Figure 1, and Figure 2), CERCLIS ID# NMN000607372. The scope of the ESI consists of collecting soil gas (SG) samples from identified potential source areas along West Central Avenue and near known chlorinated solvent impacted ground water locations (Figure 3). This ESI Work Plan summarizes the proposed SG sampling design to obtain analytical data for the identification of potential source areas, and for evaluation using the Hazard Ranking System (HRS) and the Superfund Chemical Data Matrix (SCDM) to determine if a threat to human health and the environment exists such that further action under CERCLA is warranted.

2.0 Site Investigation

2.1 Ground Water Pathway Investigation

The ground water pathway assesses the threat to human health and the environment by determining whether hazardous substances are likely to have been released to ground water and whether any receptors (through drinking water wells, wellhead protection areas, resources) are likely to be exposed to hazardous substances as a result of a release. SOS has identified impacts to the ground water at this Site and has performed a limited investigation on water quality and receptors under the West Central Avenue (WCA) Site Investigation (SI) performed in 2014. No ground water data acquisition is proposed during this ESI for the direct evaluation of the ground water exposure pathway. However, the focus continues to be the ground water pathway. Soil gas samples will be collected to identify potential source location(s).

2.1.1 Existing Data

Chlorinated Solvents have been detected at the corner of corner of 9th Street NW and Marquette Avenue NW, Albuquerque, Bernalillo County, New Mexico. The geographical coordinates of the Site are approximately 35°5'19.2' N latitude and 106°39'24.8" W longitude in Township 10N, Range 3E, Section 17. The elevation of the Site is approximately 4,954.47 feet above mean sea level (amsl). At this time there is insufficient data to identify boundaries of the chlorinated solvent plume. The primary contaminants of concern in ground water detected at the Site are trichloroethene (TCE), cis-1,2-dichloreoethene (cis-1,2-DCE), trans-1,2-dichloreoethene (trans-1,2-DCE), tetrachloroethene (PCE), and vinyl chloride (VC).

The Site was identified when chlorinated solvents were detected in 2005 in background ground water samples collected from upgradient monitoring wells at the Fruit Avenue

Plume Superfund Site (FAP) Environmental Protection Agency ID# NMD986668911 located in downtown Albuquerque, New Mexico Subsequent sampling through 2015 has continued to identify TCE and other chlorinated organic contaminants upgradient of the FAP site between 9th and 5th Streets NW. TCE was detected in the FAP upgradient wells MNW-11(D1), SFMW-14(D1) and MNW-9(D1) at 46.0 µg/L and 17.0 µg/L and 4.6 µg/L respectively during the August 2012 sampling event and at 22.0 µg/L, 14.9 µg/L and 1.9 µg/L respectively in the February 2015 sampling event. The well locations are shown on Figure 3. The D1 sampling depth is between 121 and 150 feet below ground surface (bgs). Additionally, TCE was detected in wells MNW-1(I2) at 17 µg/L and 19.8 µg/L and SFMW-13(I2) at 1 µg/L and 0.9 µg/L in 2012 and 2015, respectively. The I2 sampling depth is between 86 and 120 feet bgs. Wells WB-01(I1/I2) and WB-02(I1/I2) contained detections of TCE at 0.8 µg/L and 0.77 µg/L in 2012 and at 2.6 µg/L and 1.0 µg/L in 2015, respectively. The WB-01(I1/I2) and WB-02(I1/I2) sampling depth ranges from 61 to 120 feet bgs. The United States Environmental Protection Agency (EPA) Maximum Contaminate Level (MCL) for TCE is 5 µg/L.

The WCA SI, performed in 2014 by NMED SOS, identified four private irrigation wells and two NMED Petroleum Storage Tank Bureau (PSTB) wells for sampling. These six well locations, approximately 3000 feet southwest of the 9th Street and Marquette Ave were sampled on June 17, 2014. The samples were sent to EPA Region 6 Environmental Services Branch, Houston laboratory for analyses of trace VOCs using (Method 8260). Analytical results did not detect any of the primary contaminants of concern in these samples.

Bell Trading Post (BTP) is located at 1503 Central Ave. NW, approximately 2,375 feet west-northwest of 9th and Marquette Streets NW. Ground water data was collected at BTP in October 2001 during an NMED Voluntary Remediation Program (VRP) Phase II environmental site assessment (ESA). Ground water grab samples from the shallow aquifer water table contained TCE at 1.5 µg/L in sample SB-12 and its duplicate (SB-12D). During the 2001 Phase II ESA, subsurface soils were screened for soil gas at a depth of 2 to 4 ft bgs. Six of twelve soil gas samples contained TCE at concentrations from 0.2 µg/L or 200 µg/m^3 to 3.4 µg/L or 3,400 µg/m^3. The Phase II BTP Site Characterization Report concluded that, "there had been a possible release of chlorinated solvents at this site in the past".

A VRP Limited Phase II Expanded Site Assessment was performed at BTP in June 2014. Data gathered from soil vapor and indoor air samples identified TCE in the soil gas. The highest TCE result was identified in the soil gas sample, SG-02, at 1,800 µg/m^3 which is well above the recommended EPA Vapor Intrusion Screening Level (VISL) for TCE at 21 µg/m^3. SG-02 was collected 3 feet bgs near the intersection of Roma Ave NW and Laguna Blvd. Details of the June 2014 results are described below in Section 2.2.1.

Because TCE has been detected in soil, soil gas and ground water at the BTP, a focus of the ESI will include active SG sampling near the BTP. The ESI sampling is designed

to target BTP and additional potential source areas that have been identified through Albuquerque Business Directory and Sanborn Fire Insurance map reviews. Additionally, the active SG sampling network can be used as a tool to potentially identify the ground water plume location in the WCA area.

2.1.2 Ground Water Use

Of the 87 active municipal supply wells in the Albuquerque Bernalillo County Water Utility Authority (ABCWUA), 24 of the wells are within a four mile radius of the Site. VOC analytical data for the period from 1996 through January 2013 indicate that ground water samples from three (3) of the inactive municipal supply wells within the 2-3 mile radius of the Site have exhibited detections of TCE below the EPA drinking water MCLs and below the New Mexico Water Quality Control Commission human health standards. Other water supply wells that are within the 4 mile radius include the active UNM Well #7, the active Presbyterian Hospital well and the Lovelace Medical Center well that was shut down in 1997. All three of these wells have all had detections of TCE below the EPA drinking water MCLs and below the New Mexico Water Quality Control Commission human health standards at various times in the past. Other unidentified contaminated private wells may exist considering there are up to 3,083 permit records with the New Mexico, Office of the State Engineer (OSE) for private wells within a four mile radius of the Site.

2.2 Soil Pathway Investigation

The soil exposure pathway assesses the threat to human health and the environment by direct contact with hazardous substances and areas of suspected contamination. This pathway addresses any material containing hazardous substances that is on or within 2 feet of the surface and not capped by an impermeable cover. Based on current knowledge the Site source area is unknown, however, there is a strong possibility that one source area may be at 1503 Central Ave. NW. The majority of the ground surface in the area along Central is capped with asphalt, concrete, homes and businesses. No data acquisition is proposed during this ESI for the evaluation of the soil exposure pathway. However, because the contaminants at the Site are VOCs, volatilization from soil or ground water to soil gas and air, particularly indoor air, may present an exposure pathway. There is concern for air exposure within buildings and residences that overly the ground water plume. The potential for an air exposure pathway will be reviewed and considered based on the SG data collected for this ESI.

2.2.1 Existing Data

Soil gas samples around the BTP, located at 1503 Central Ave. NW, were collected in October 2001 as part of an NMED VRP Phase II ESA. Thirteen soil gas samples were collected from twelve borings at 12 feet below ground surface. Six of the thirteen samples detected TCE ranging from 0.2 µg/L to 3.4 µg/L. The highest soil gas reading was from borehole SB-03 at the corner of Laguna Blvd. NW and Roma Ave NW.

In 2013, a request was made by the Family Housing Development Corporation for assistance through the NMED Brownfields Program for investigation and assessment of the property. In June 2014, a Limited Phase II ESA was performed at BTP pertaining to potential indoor air impacts. The investigation included collection of soil vapor samples and indoor air samples. Details of the June 2014 results are summarized below and in Figure 4.

Building Exterior

- Three (3) soil borings were advanced to approximately 3 ft bgs and soil vapor was extracted from each borehole for VOC laboratory analyses via EPA Method 8260 using an ATD-GCMS. TCE was identified in soil gas sample SG-02 at 1,800 $\mu g/m^3$ which is well above the recommended OSWER EPA VISL for TCE of 21 $\mu g/m^3$. TCE was not detected in soil gas sample SG-01 above the reporting limit (5.0 $\mu g/m^3$), while TCE was reported in sample SG-03 at 11 $\mu g/m^3$.

- Exterior outdoor air samples representative of "ambient" conditions over an 8-hr period were collected for VOC analysis via EPA Method TO-15 SIM. VOC constituents in sample AIR-O-01 did not exceed any EPA regional screening levels.

Building Interior

- Two (2) soil borings within the building crawlspace were advanced to approximately 2 ft bgs and soil vapor was extracted from each borehole for laboratory analyses via EPA Method 8260 using an ATD-GCMS. The soil gas results for sample SG-04 indicated chloroform, naphthalene and TCE all below the reporting limit. Sample SG-05 contained naphthalene at 3.5 $\mu g/m^3$ and TCE at 14 $\mu g/m^3$.

- Two (2) "source" air samples were collected within the crawlspace over an 8 hour period for VOC analysis via EPA Method TO-15 SIM. Samples AIR-C-01 and AIR-C-02 contained chloroform at 1.5 $\mu g/m^3$ and 1.7 $\mu g/m^3$, respectively. Both concentrations are above the EPA regional screening level for indoor air. Sample AIR-C-01 contained TCE at 3.1 $\mu g/m^3$, above the EPA regional screening level of 2.09 $\mu g/m^3$ indoor air. PCE was detected at 18 $\mu g/m^3$ in AIR-C-01, which is well below the EPA regional screening level 41.7 $\mu g/m^3$ PCE for indoor air.

- Two (2) "ambient" air samples were collected within the occupied/communal areas over an 8 hour period for VOC analysis via EPA Method TO-15 SIM. The results for samples AIR-I-01 and AIR-I-02 were all below reporting limits and/or EPA regional screening levels.

Based on the 2014 results, the Limited Phase II ESA report concluded that an acute release of chlorinated solvents, specifically TCE and chloroform, historically occurred at the Bell Trading Post property or within the immediate vicinity of the site. According to the report, the release most likely occurred during the site's operation as a jewelry manufacturing facility. The data indicates that TCE and chloroform are present in soil vapor within the northwest corner of the site near the corner of Roma Ave and Laguna Blvd intersection. Concentrations appear to quickly dissipate to the east and west, and less so to the south, suggesting a potential south/southwest trending vapor plume that extends under the current site building. The Limited Phase II ESA concluded that the vapor plume appears to be contained within the site property to the east, west, and south; however, there is no data currently to address areas to the north and northwest of the site.

Because TCE has been detected in soil, soil gas and ground water at the BTP, a focus of the ESI will include active soil gas sampling near the BTP and other target locations.

2.2.2 Data Acquisition Strategy

Collection of Non-Sampling Data

The Hudspeth Directory Company's Albuquerque City Directory for the years of 1947, 1952, 1962, 1965, 1967, 1970, 1975, 1980, 1985 and 1990 were reviewed by NMED SOS for business that potentially use TCE and PCE. The street addresses reviewed were along Central Avenue West between 6th Street (600 west block) and the Rio Grande (2700 west block). Additionally, addresses along Lomas Avenue west (originally New York Ave) from 6th Street (600 west block) to Central Avenue (2000 west block). The Sanborn Fire Insurance maps for the years 1924, 1931, 1942 1951, and 1957 were reviewed for business, or structure notations that would indicate businesses of interest located in the triangular area between Lomas Avenue and Central Avenue and 2 blocks north and south of this triangular area of review (see Figure 3). A Bernalillo County property tax search was completed to assess owners of record for properties where additional investigation is a high priority.

Sampling Activities

The primary objectives of the ESI are to collect active SG samples and obtain analytical data to evaluate potential source release points for the TCE ground water plume west of MNW-11. The sampling effort will include collecting up to 50 SG samples. The SG sampling points will be focused west of 9th Street and Marquette Ave. Target addresses include 1105 Central Ave NW, 1202 Central Ave SW, 1404 to 1408 Central Ave SW, 1433 Central Ave NW, 1503 Central Ave NW, 1601, Central Ave NW, 1701 Central Ave NW, 1816 Central Ave SW, 1837 Central Ave NW, (b) (6) and 1006 Park Ave SW (see Figure 5). Additional SG sample points will be focused along 14th St NW, Marquette Ave NW and Roma Ave NW to capture data both cross gradient and parallel to the local ground water flow direction. Table 1 identifies the proposed SG sample

locations. All sampling will be conducted in accordance with the NMED Ground Water Quality Bureau (GWQB) Quality Management Plan (QMP) (NMED, March 2016), NMED SOS Quality Assurance Project Plan (QAPP) (NMED, March 2016), and NMED SOS Standard Operating Procedures (SOP) Manual (NMED, July 1999) for soil gas sampling. All field activities will be documented in the Site Log Book, on field sample forms, and in FROG - 4000^{tm} Data Log Book and computer spread sheet.

Active Soil Gas Sampling

Proposed sampling locations are depicted in Figure 6 through Figure 13. Table 1 lists the target locations with an approximate number of samples planned for that location. Table 2 contains a summary of sample analyses planned. A request for utility location identification will be submitted before drilling starts. Sample drill points are subject to slight changes based on the underground utility locations identified. Additionally, as samples are collected and field test results are reviewed, sample points may be adjusted accordingly to track any soil vapor plumes that are identified or to decrease sample collection in areas of non-detect. Access agreements for private properties will be requested based on the Bernalillo county tax owner of record list. A City of Albuquerque excavation barricade permit will be obtained to obtain access to city property for sample points.

The SG sampling will utilize a Macho hammer drill to install vapor points and dedicated tubing to a planned depth of 6 to 10 feet bgs. Each boring that does not collapse upon drive stem removal will be backfilled with clean fill sand at the slotted tip and at a mid-point for leak testing. The remainder of each boring will be backfilled with hydrated bentonite. The tubing will be purged slowly and the system pressure tested with a magnehelic connected to the purge equipment and a magnahelic linked by independent tubing to a sand interval near the midpoint of the boring depth. Purge volume for 10 feet of Macho 3/16 outside diameter tubing with drive point is approximately 25 cubic centimeters (cc) the time to purge is estimated to be between 2 and 5 minutes. The grab sample will be collected in a 1 liter Tedlar bag within a vacuum box. Air will be removed from the vacuum box at a rate slow enough to avoid air rebound when the pump is disconnected and to avoid short circuiting of air along the drive shaft of the drill. Dedicated drive point and tubing will be installed at each bore hole. The location of each SG sample point will be surveyed with GPS and recorded in the field book. The manufacturer's SOP for the Macho System air sampling instructions are attached in **Appendix A**.

Each Tedlar bag sample will be analyzed in the field using the FROG-4000^{tm} GCS (FROG). The FROG will be calibrated at the Defiant Technologies Laboratory prior to the start of field work. The five point chlorinated alkenes calibration will enable the FROG with Elvin software to detect and measure concentrations of PCE, TCE, Cis-1,2 DCE, Trans-1,2 DCE, and VC. The field analysis will be performed in an indoor environment at the NMED District 1 offices a few blocks from the work site. When the air samples arrive they will be stored in a cooler at room temperature. The air sampling adaptor will be connected directly to a Tedlar bag, when the FROG analyze button is

engaged the FROG draws an adequate sample into the unit and the analysis sequence begins. The FROG will be attached to a computer with Elvin Software installed. Each sample analyzed will be given a unique date/time stamp and this will be recorded along with the sample location information and data collected. The FROG then goes through a purge cycle and zeros out prior to running the next sample. The software will allow the user to calculate volumes of the chlorinated alkenes detected. Appendix B contains the FROG user manual.

Laboratory control grab samples will be collected using 1 liter mini-Summa or 5 liter Summa canisters. The size of the Summa will be based on the laboratory availability. The Summa samples collected by NMED SOS will go to an EPA Contract Laboratory Program (CLP) laboratory or EPA Region 6 Environmental Services Branch (ESB) Laboratory VOC analyses (using TO-15 method). Approximately 10 samples will be sent to confirm the FROG-4000^{tm} results. Field parameters to include pressure test readings, will be measured and recorded and daily local barometric air pressure and temperatures will be recorded from the Albuquerque International Airport NOAA site http://w1.weather.gov/obhistory/KABQ.html by NMED.

All reusable equipment used for SG measurements and sample collection will be decontaminated prior to use at each sample point. Decontamination procedures include cleaning with steel brush, and soap (Liquinox) wash followed by a tap water rinse and deionized water rinse. Only limited external decontamination of the hammer drill parts is expected because all soil gas will be collected with dedicated drill tip, collection tubing, Tedlar bags, and Summa canisters.

2.3 Surface Water Pathway Investigation

The surface water pathway assesses the threat to human health and the environment by determining whether hazardous substances are likely to have been released to surface water; and whether any receptors (intakes supplying drinking water, fisheries, or sensitive environments) are likely to be exposed to a hazardous substance as a result of a release. SOS has identified surface water drainages in the vicinity of the site for future consideration and has performed a limited investigation for water quality and receptors. No data acquisition is proposed during this ESI for the evaluation of the surface water exposure pathway.

2.4 Air Pathway Investigation

The air pathway assesses the threat to human health and the environment by determining whether hazardous substances are likely to have been released to the air; and whether any receptors (human population and sensitive environments) are likely to be exposed to hazardous substances as a result of a release No data acquisition has been performed for the evaluation of the air pathway.

3.0 Project Management

3.1 Key Personnel

The project manager for the West Central Avenue, Martyne Kieling, will schedule field activities, enlist appropriate personnel, verify site access authorization, and direct and oversee all onsite and offsite field activities associated with the investigation. The project manager will also document and manage all collected samples. A total of six (6) SOS personnel will collect, prepare samples, run the FROG-4000^{tm} Gas Chromatography System (GCS) and record the analysis; collect, prepare and ship Summa canisters for off-site analysis and support all other field operations as necessary.

3.2 Quality Assurance / Quality Control

EPA Region 6 ESB or assigned CLP laboratory will be used for the subset of ten (10) samples. Soil gas Quality Assurance / Quality Control (QA/QC) for this sampling event will consist of field blanks, and replicate samples. No equipment blanks, trip blanks, matrix spike/matrix spike duplicate samples (MS/MSD), or temperature blanks will be collected. A minimum of one field blank will be collected during the sampling event. Additional field blank(s) will be collected if samples are being collected in a location in which potential exposure to the contaminants of concern appears possible. Replicate samples will be obtained from one in ten sampling locations per matrix and will be labeled differently than the primary sample. Prior to use each Summa will be inspected to verify that appropriate lab certified vacuum level is contained within. Beginning and ending pressure will be noted on custody tags along with sample collection location, start and end times.

All samples submitted for laboratory analysis will be prepared in accordance with Analytical Method for the Analysis of Trace Concentrations of Volatile Organic Compounds (VOC) and NMED SOS Standard Operating Procedures (SOPs). CLP analytical method TO-15 will be utilized for organic analyses of soil gas samples. Soil gas results will be reported as ($\mu g/m^3$).

3.3 Field Equipment

Field equipment will consist primarily of the Macho Hammer Drill drive points, rod and dedicated sample tubing, generator, vacuum collection box, Tedlar bags, Gillian GilAir pump, MiniRae air analyzer, magnehelic, associated valves, tubing, and syringes. **Appendix A** contains the manufacture SOP for the "Macho Hammer Drill Soil Gas Collection System". Sample collection containers for this investigation will include Tedlar bags and Summa containers. Decontamination equipment will include brushes deionized and tap water, Liquinox, brushes and other items. The FROG-4000^{tm} GCS will be set up at the NMED District Offices in a secure room. **Appendix B** contains the Frog-4000^{tm} User Manual.

3.4 Field Activities

The proposed schedule and field activities are as follows: On Friday July, 15, two staff will transport necessary field items to Albuquerque District One (D-1) office and set up FROG-4000^{tm} in the equipment staging & work space area. On the morning of Sunday July 17, 2016, staff will deploy to Albuquerque. Field work will begin early morning on July 17, 2016 staff will review the health and safety plan prior to commencement of sampling. Boreholes with dedicated sample tubing will be installed and SG samples will be collected throughout the day. As samples are collected one staff member will run samples from the field location to the D-1 office for analysis. One staff member will run the FROG-4000^{tm} GCS at the D-1 office, documenting results and relaying them to the field team leader. The field team leader will receive the GCS results and prioritize sample locations accordingly. Outdoor field personnel will shift work duties periodically to allow for cooler/less strenuous work stations at the indoor/vehicle positions.

This routine will be repeated daily through Thursday July 21 until all sample locations have been covered. Staff will be working approximately 10 hour days. If there are any sites that cannot be covered in the Sunday through Thursday work week, Monday July 25th will be used as a mop-up day. However, all laboratory confirmatory samples must be shipped no later than Thursday July 21, 2016. All necessary paper work will be completed and Summa SG samples will be shipped on Tuesday, July 19 and Thursday July 21, 2016 to the assigned laboratory from the nearest UPS drop off location capable of next day air shipping (Albuquerque - 1238 Aspen Ave NW or 2401 Comanche Rd NE).

3.5 Investigative Derived Waste Plans

Waste will be stored, characterized and disposed of according to the guidance, Management of Investigation- Derived Wastes (IDW). Generation of hazardous waste is not expected with hammer drilling and collection of SG samples. Wash and rinse wash water is not expected to be hazardous and will be disposed of on the ground and allowed to infiltrate and evaporate. If suspect RCRA hazardous wastes are encountered, they will be handled and disposed of accordingly.

3.6 Health and Safety

All personnel in sample collection and handling will have completed all the necessary OSHA-mandated health and safety training. The site safety officer will insure that: 1) the necessary personal protective equipment is available on site; 2) utilized work practices will minimize the risk of exposure to potential hazards; and 3) all personnel will read the site health and safety plan and emergency response plan and will be briefed prior to the start of each work shift during the field investigation. The Site Specific Health and Safety Plan (SSHASP) will be kept on site with each team at all times in both field and office locations. The SSHASP will be reviewed in a tailgate safety meeting each day prior to the commencement of field activities. The SSHASP is included in **Appendix C,** and the hospital route map is included as Figure 14.

Field work will be conducted in modified Level D personal protective equipment. Safety equipment will include steel-toed boots, safety glasses, and disposable nitrile or latex gloves, work gloves and high visibility safety vest. Each site will set up a safety exclusion zone to prevent pedestrian walk through. Exclusion zone equipment will include hazard lights for the vehicle, barricades, cones, and caution work zone tape.

3.7 Schedule and Deliverables

The ESI sampling field work is expected to take place during the week of July 17, 2016. After analytical results from the FROG-4000^{tm} GCS is reviewed and results compared with the data received by NMED SOS from the contract laboratory, the results will be sent to the property owners with a brief interpretation. A Phase 1 ESI Report will be prepared accordingly and submitted to the EPA Region 6 Site Assessment Manager.

FIGURES

Figure 1 Counties and Rivers in New Mexico, Bernalillo County highlighted.

Figure 2 Albuquerque area map, West Central Avenue area in the red box.

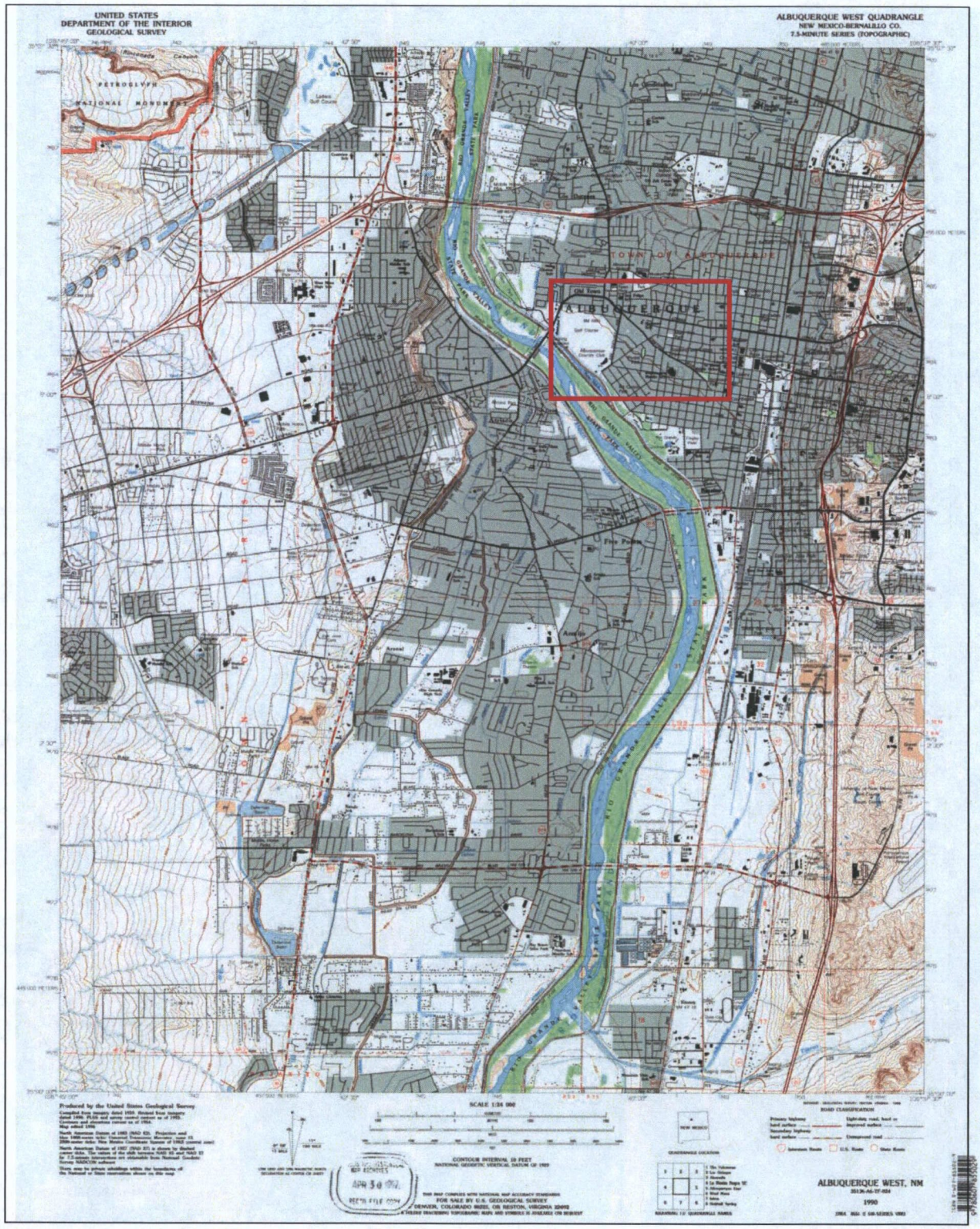
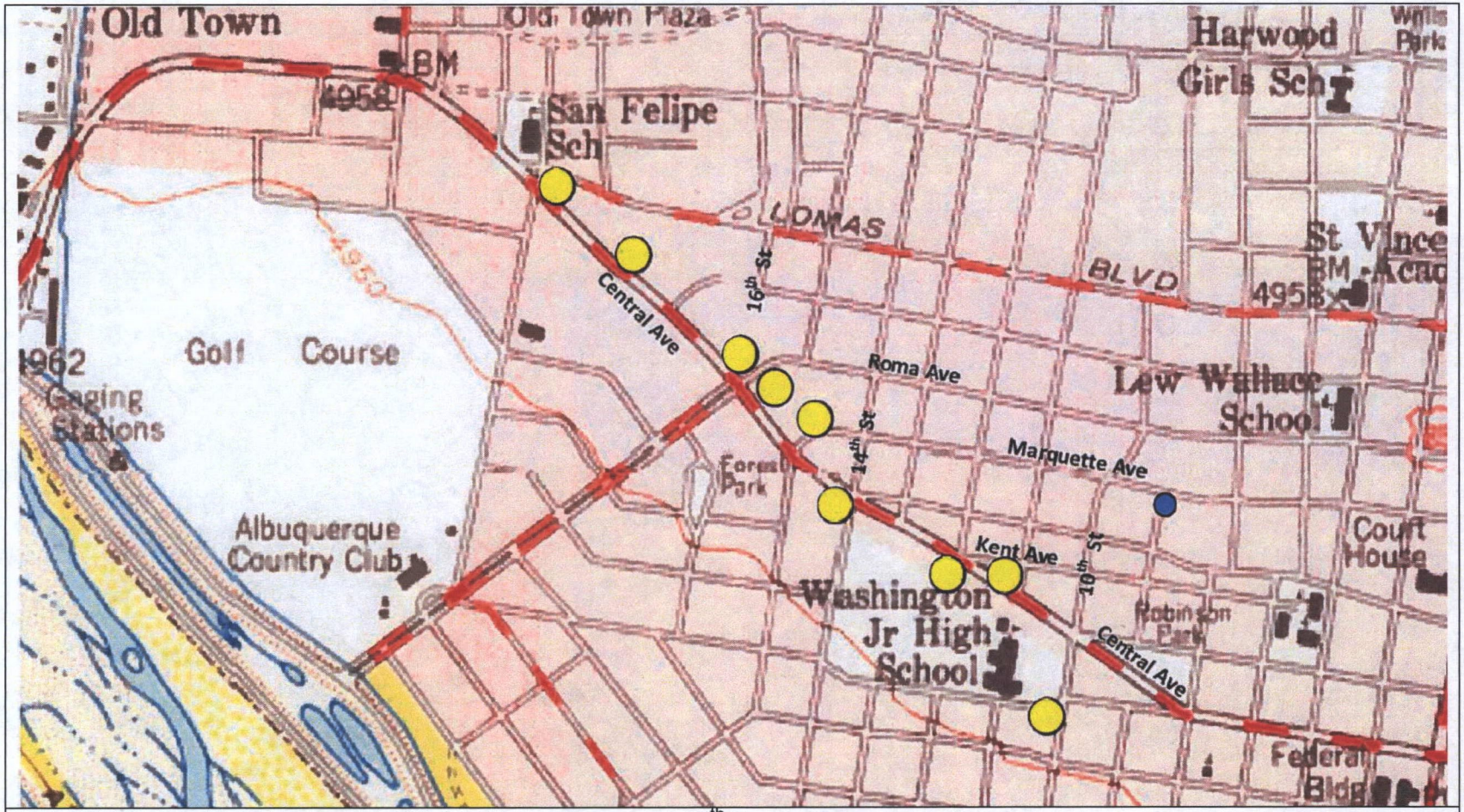


Figure 3 Area of review for the ESI outlined in red.

Figure 4 VRP June 2014 Sample Locations at Bell Trading Post.

Figure 5 Target Soil Gas Sample areas proposed for West Central Ave.



Note: Blue point is the location MNW-11 monitor well at 9th St. and Marquette Ave.
Yellow ponts are the Target areas to be invistigated.

Figure 6 Sample points (3) proposed for 1815 Central NW & Rancho Seco-area.

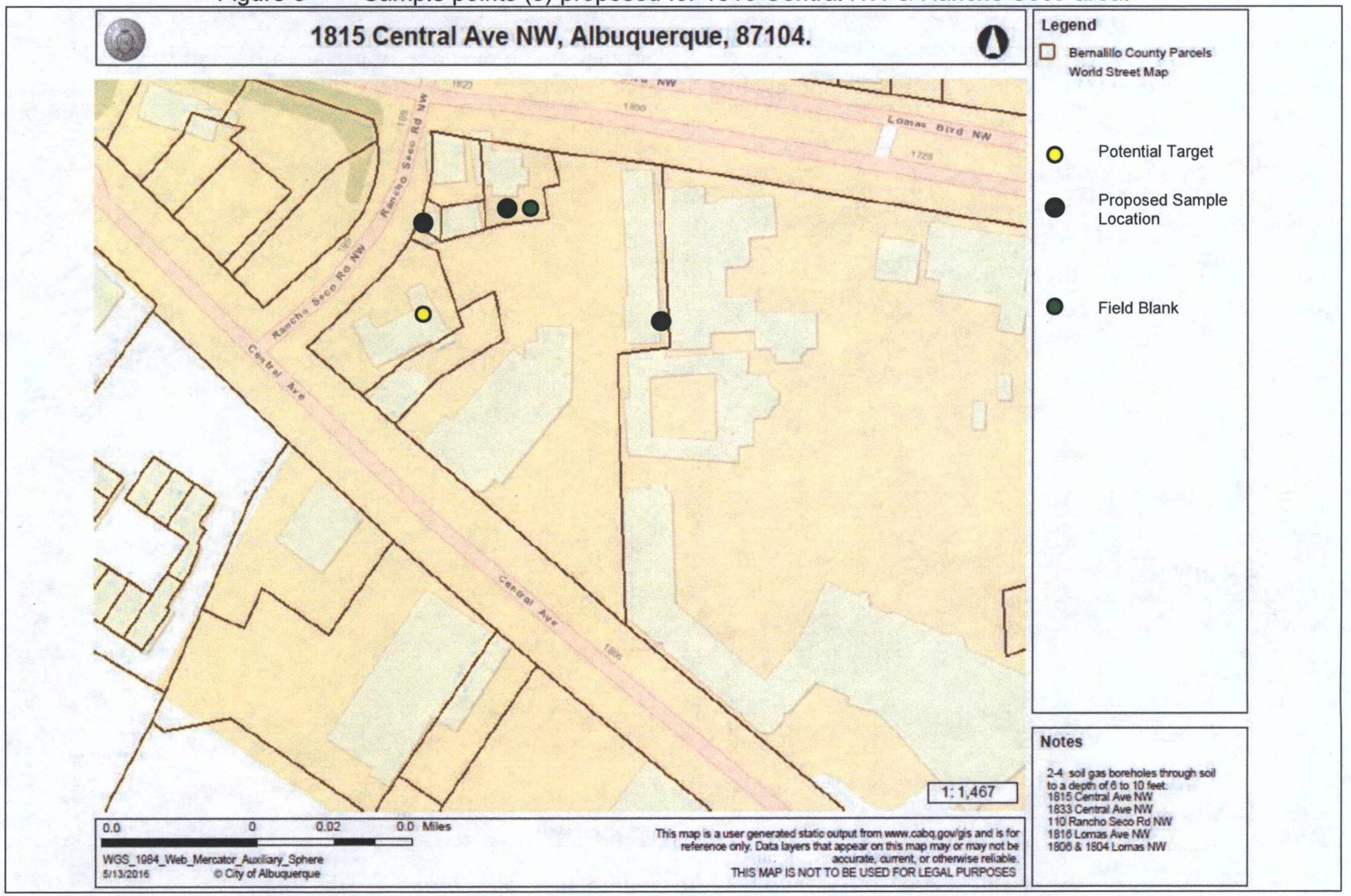


Figure 7 Sample points (3) proposed for 1801 Central NW area.

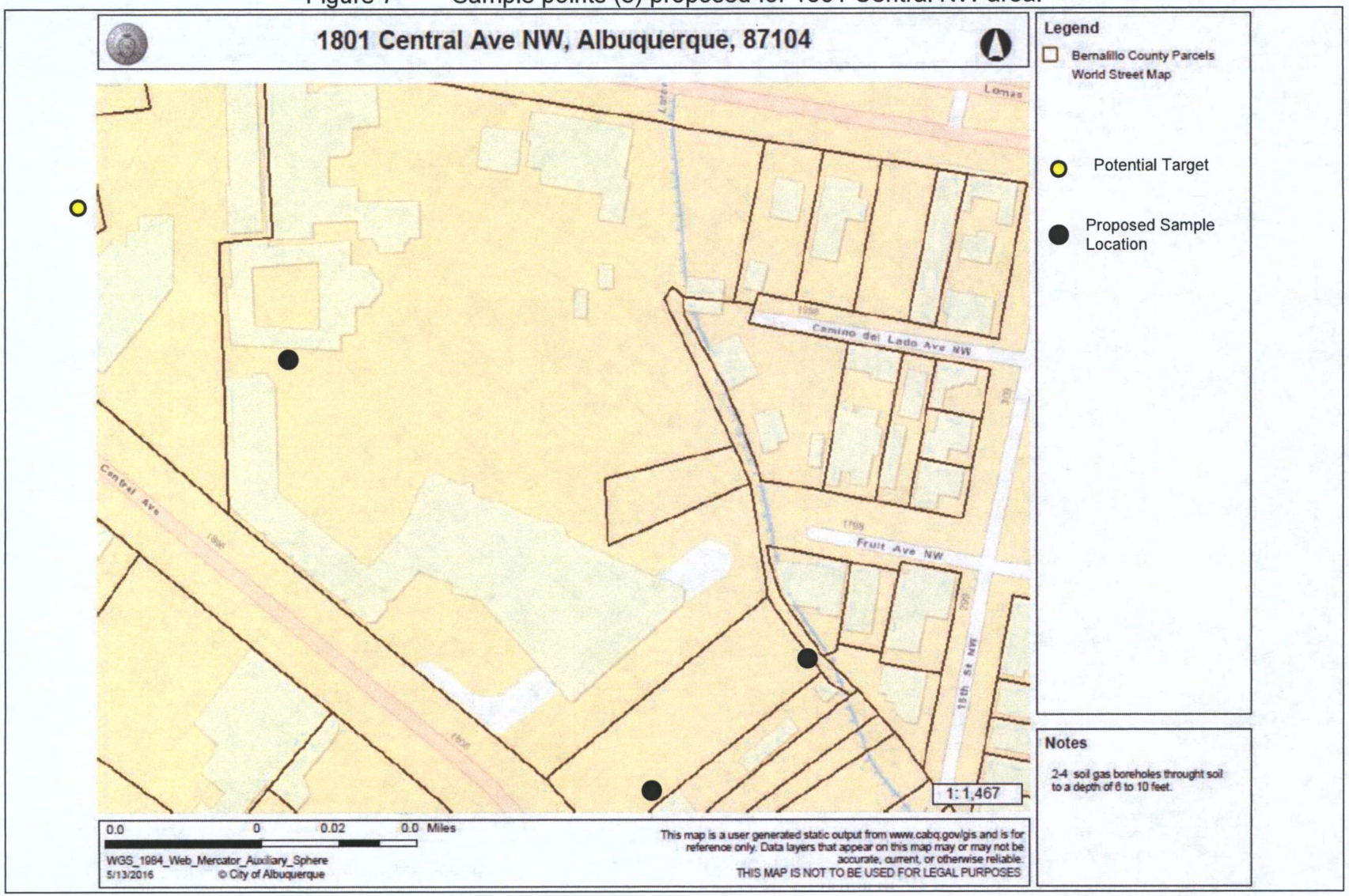


Figure 8 Sample points (8) proposed for 1611 Central & [redacted] Pl area.

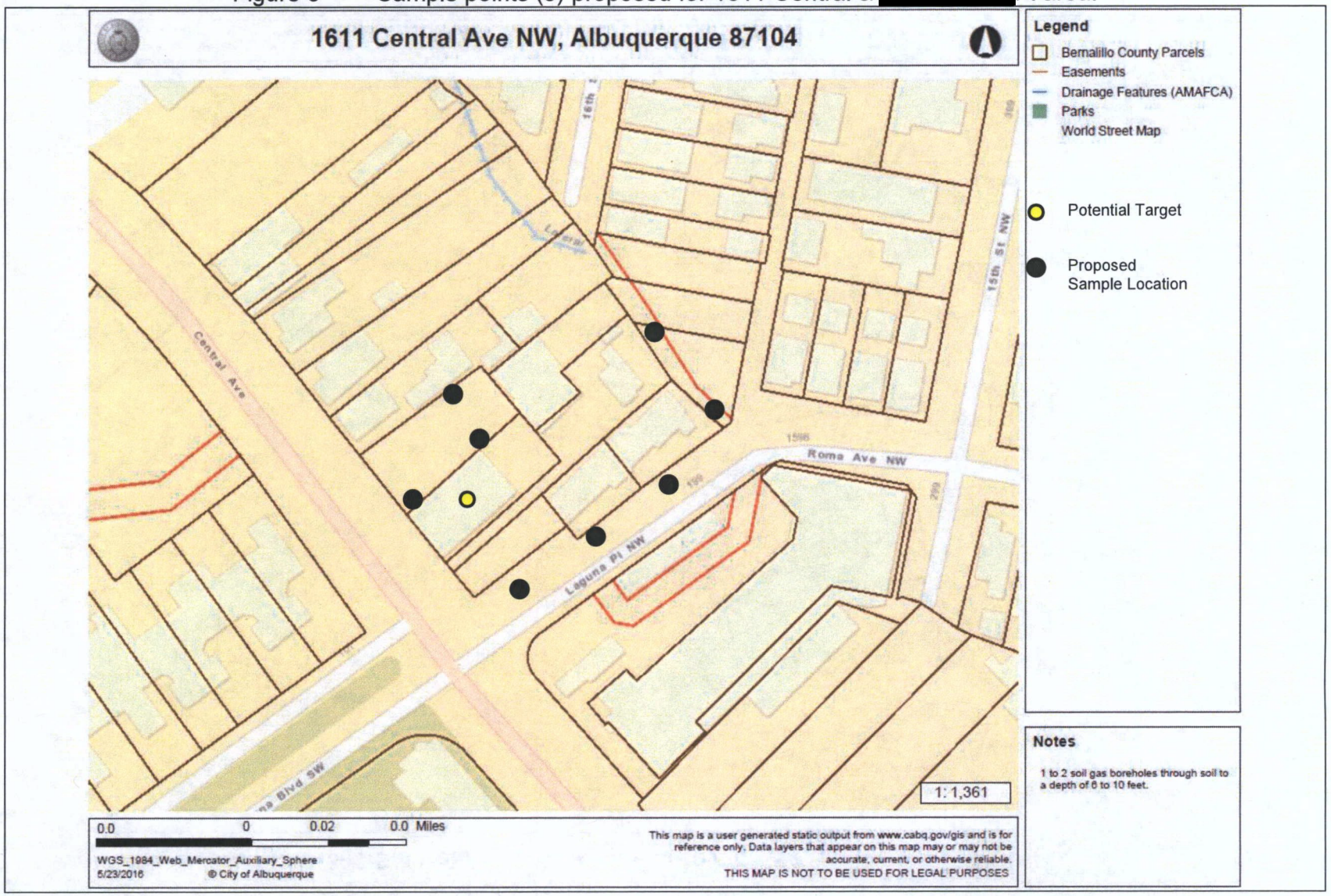


Figure 9 Sample points (15) proposed for 1503, 1445, 1433, & 1429 Central area.

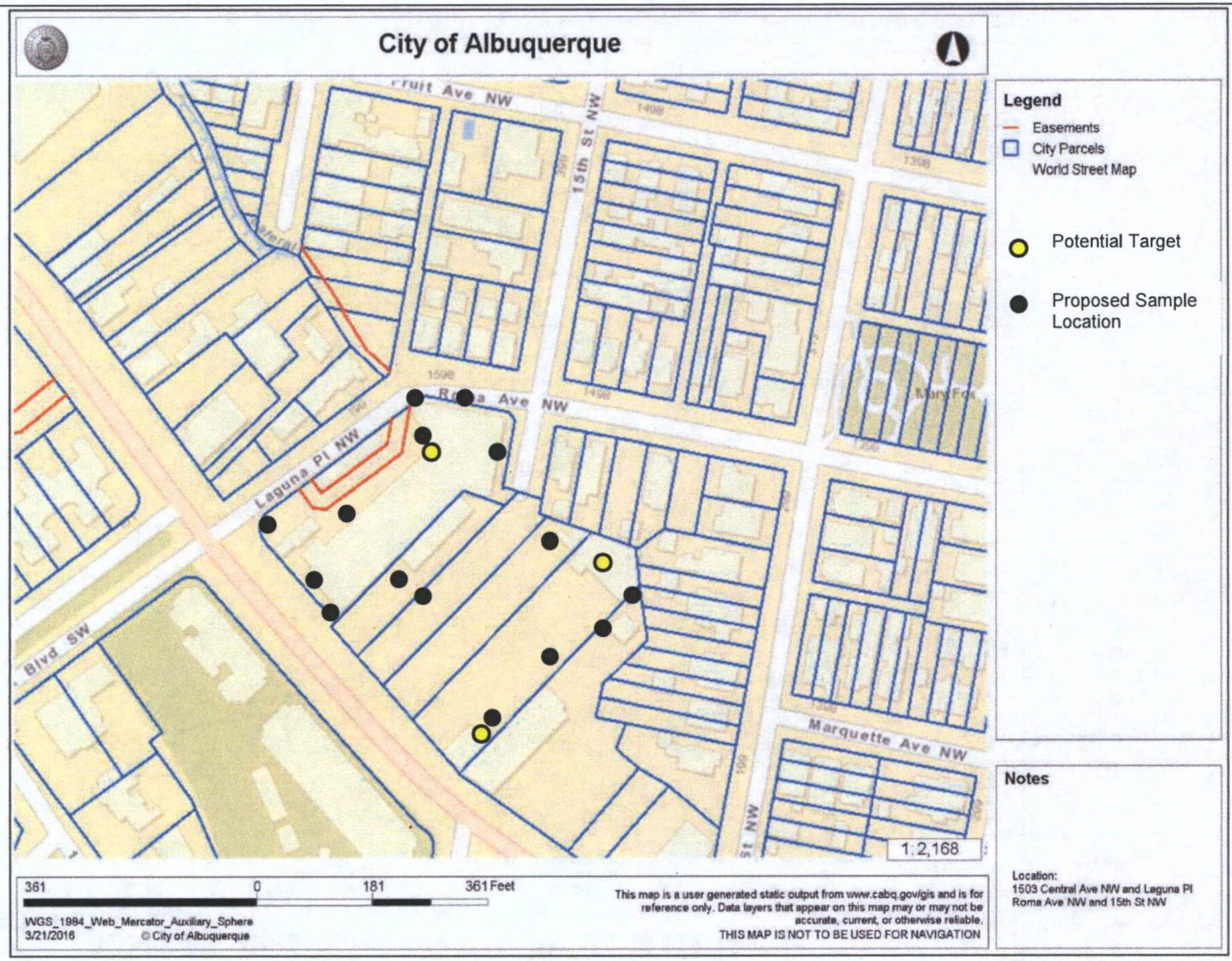


Figure 10 Sample points (16) proposed for Roma, Marquett, & 14th St. area.

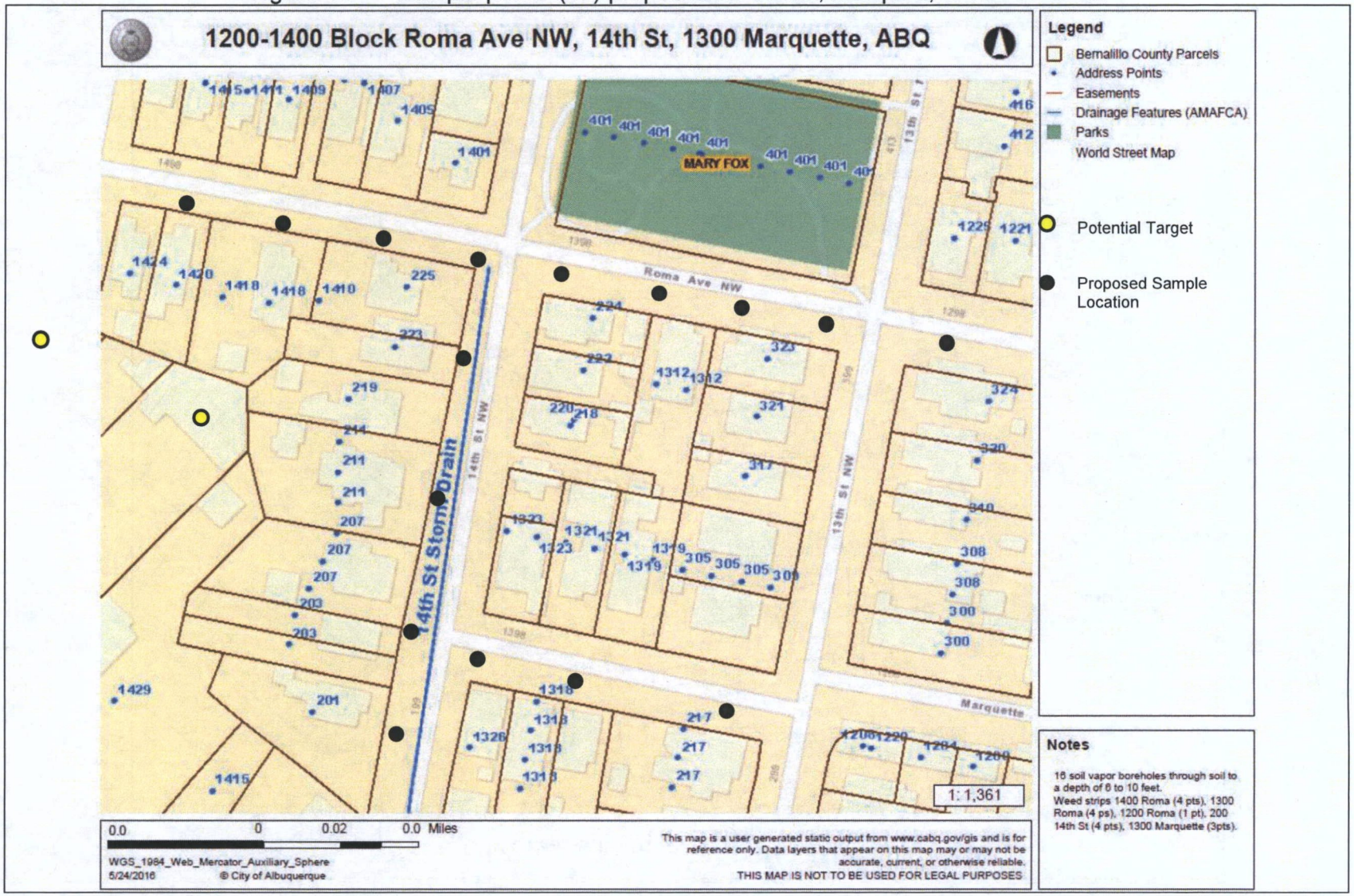


Figure 11 Sample points (6) proposed for Lomas Ave and 14th St NW area.

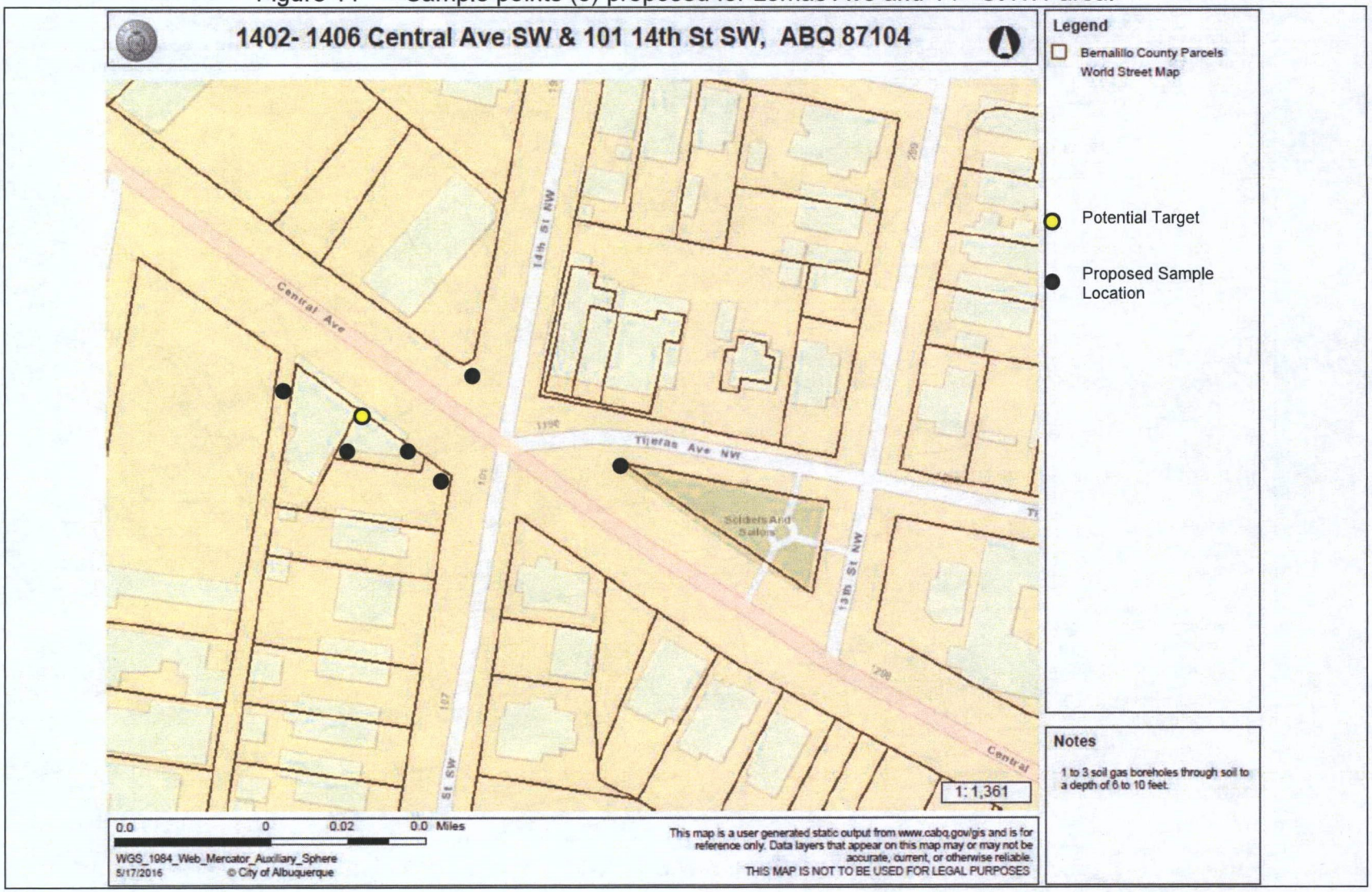


Figure 12 Sample points (13) proposed for 1200 Central, 1100 Kent&11th St area.

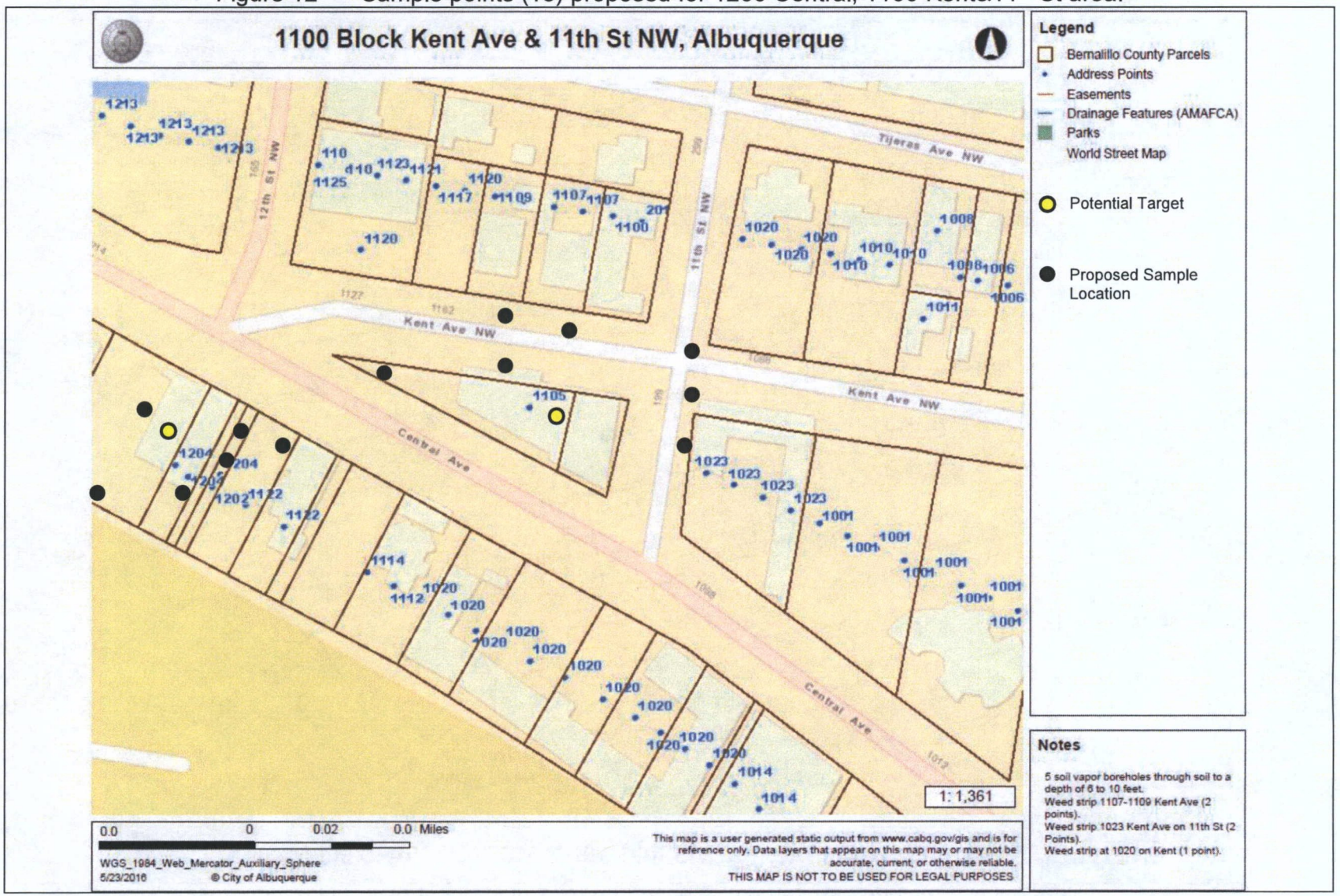


Figure 13 Sample points (5) proposed for 1000 Park Ave area.

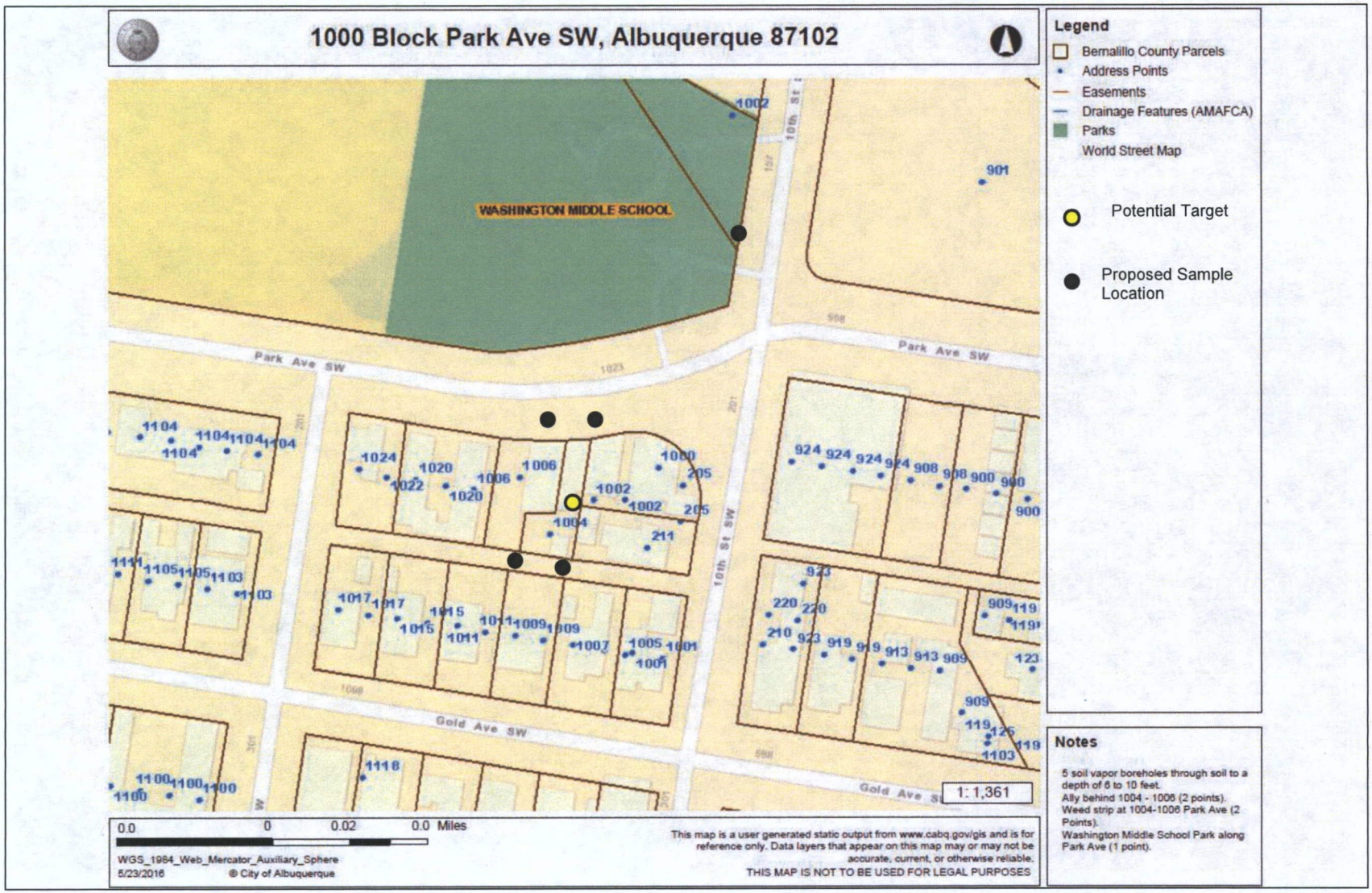


Figure 14 Hospital Route - 1.9 mi. east on Central Avenue to Presbyterian Hospital

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TABLES

Table 1 Properties & Potential Sample Locations WCA, ESI July 2016

Properties of Concern & Potential Sample Locations West Central Avenue, ESI July 2016			
Address Central Ave West	**Business Type**	**Years In Business. Directory dates reviewed 1947, 52, 62, 65, 67, 70, 75, 80, 85 and 90**	**Proposed Number of samples**
1105	Speed Queen Laundry & Dry Cleaning70- Extra Quality Coin Laundry 75,80 - X-Tra Quality Coin Laundry Inc. 85-	1970 - 1975- 1980- 1985- /90	6
1202	Master Dry Cleaners	1952- 1962- 1965- 1967- 1970- /75	6
1404	Esco Bio-chemicals Co.	1952- /62	6
1406	Esco Bio-chemicals Co. vitamin production - Esco Bio-chemicals Co. Pharmaceuticals 67- Electronics' TV Laboratory 75 -	1962 - 1965- 1967- 1970- 1975- /80	
1408	Duke's Enterprises Ltd Indian Jewelry Manufacture	1975- 1980- /85	
1433	Neighbors Laundromat The (1431 in 65, 67)	1962- 1965- 1967- 1970- 1975- /80	9
1503	Bell Indian Trading Post 47 - Bell Indian Trading Post Lmtd Jewelry manufacturers 62, 65 - SunBell Corp. Jewelry Manufactures 70, 75- Albuquerque Photo Laboratory Inc. 80- Michelson Metals 85	1947- 1962- 1965- 1967- 1970- 1975- 1980- 1985- 1990-	6 +16 along 14th and Roma
1503	Chief Weavers Ltd. - Chief Weavers The Jewelers -	1947- 1952- /	0
1701 most likely 1601	Indian Silver Craft	1965- 1967- 1970- 1975- 1980- 1985- /90	8
1816	Aamco Transmission, Kellys Transmission Co.	1975-1980 1985-1990 ROS inv 2007	0
1911 or 1837	Unique Cleaners - Unique Cleaners (1837 address change 1980)	1947- 1952- 1962- 1965- 1967- 1970- 1975- 1980-	6
Lomas Ave West	**Business Type**	**Years in business**	**Number of samples**
(b) (6)	Moore Radio Service repair	1947- 1962- 1965- 1967- /70	0
Park Ave West	**Business Type**	**Years in business**	**Number of samples**
1006	Park Ave Cleaners	1957 – mid 1990s? VRP in 2000	5

Note: Red Type - Jewelry manufacture
Blue Type - Dry Cleaners
Black Type - Other business types
Pink Highlight - Area with known TCE in subsurface soil, soil gas and ground water.
Green Highlight – Area with known PCE in subsurface soil gas and ground water.

Table 2 Soil Gas Samples to be collected.

Sampling method	Analysis	Sample Container	Number of Sample locations
Active Soil Gas sampling at 6 – 10 feet bgs.	Gas Chromatography FROG 4000 for chlorinated Alkenes	1 L Tedlar bags	50
Active Soil Gas Sampling at 6 – 10 feet bgs.	TO-15 Trace	1 L mini Summa or 6 L Summa (dependent upon lab availability)	10

APPENDIX A

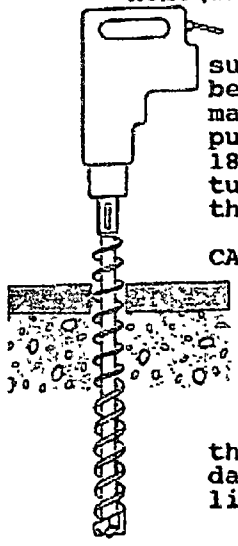
Macho System Assembly, Operation, and Soil Gas Sampling Procedures

Macho

The Macho System is designed for more efficient field use and has increased capabilities over the Model 14. Its shafts are the same diameter (5/8") as those of the Model 14.

The Macho System is driven by a 13 lb. electric rotary hammer allowing penetration to depths of 8 to 15 feet in average, unconsolidated soil (see Figure 6, page 35). The hammer included with this system can produce a rotary as well as a vertical hammering movement. It is powered by a 15 amp 120 volt portable generator. The Macho System can be used in most soil conditions.

KVA also carries an optional variable speed rotary hammer weighing 16.5 lbs. Probing can be accomplished more rapidly and with greater control using this hammer. The variable speed hammer is highly recommended for non-homogeneous soils.



If the area where the shafts will be driven is surfaced with either concrete or asphalt, it will first be necessary to drill through the hardtop. Insert the masonry bit into the hammer. To lock the bit in place, pull out the lever located under the barrel and turn it 180°. The switch located near the trigger should be turned to the rotation mode before beginning to drill through the hardtop.

CAUTION: Always keep your body away from the hammer when in use. Should the drill become stuck in the soil, the hammer will rotate and could cause injury. Leaning on the unit while in operation will rob the hammer of its power and may cause the bit to go in at an angle.

After the initial hole has been drilled, disengage the masonry bit from the hammer. Clean the bit with a damp cloth to remove soil or debris, thus prolonging the life of the equipment.

ASSEMBLING AND DRIVING THE PROBE

Using threaded hollow nipples, screw the slotted intake to a shaft section. Make sure the threaded ends of the shaft and nipples are clean and free of debris. The use of either Teflon tape and/or vegetable shortening on the threads will make assembly and disassembly easier. Twist together and wrench tighten. Complete the assembly by connecting the hammer adaptor to the end opposite the slotted intake with another hollow nipple. For increased strength, use a KVA #14-025 1/8 inch ID connecting nipple, when internal use of tubing is not required.

To prevent breakage and excessive wear, these connections must remain tight during profiling. By keeping the connections tight, the force of the hammer will be transferred from shaft to shaft. If the force goes from shaft to nipple to shaft, the nipples heat up and work-harden. This type of hardening reduces the strength of the nipples making them prone to breakage. (Note: Any nipple which has become hot should not be used again. Even in proper operation, nipples will eventually wear out and should be replaced every 3-6 months depending on use.)

To maintain tight connections during use, slowly turn the hammer in a clockwise direction while pounding the shafts into the ground. After the shafts have penetrated a few feet, rotation will no longer be possible. At this point keep a light clockwise force on the hammer to keep the connections tight.

INSERTING THE PROBE

Install the assembled probe in the hammer by locking the adaptor into place. This is accomplished by aligning the notch on the hammer adaptor with the locking pin on the hammer. Switch the lever located by the trigger to the hammering mode. Hold the hammer in a vertical position, keeping the point on the ground, and depress the trigger. The shafts should remain as straight as possible for maximum efficiency while driving. If the unit encounters an obstacle or resistance as it penetrates, it will stop drilling and bounce on the object. Should this occur pull the shafts out of the ground, move over a few inches and begin driving again. Attempting to force the unit against an immovable object will cause damage. Attach additional shaft sections as necessary to reach the desired depth. Leave about six inches of shaft above ground level for easier attachment and/or removal of the shafts.

PURGING AND SAMPLING

SOIL GAS:

When driving has been completed, unscrew the hammer adaptor from the shaft section and replace it with the gas connector. Slip a piece of 1/4 inch silicon tubing over the hose barb of the gas connector, allowing enough tubing to make a flexible attachment. (The tubing should be replaced between samples to avoid cross-contamination.)

If a self-purging organic volatile analysis detector (OVA), photoionization detector (PID), or gas chromatograph (GC) is being used, KVA recommends that the shafts be purged using an air pump before connecting them to the detector.

KVA offers a small battery-operated air pump that pulls about 2.5 inches of mercury vacuum and pumps 200 cc/minute. Purge three volumes of air before sampling. Purging time will depend upon the type of pump used and the soil conditions. Typically, it will take two to five minutes to purge the system with the KVA pump. (At a depth of 10 feet, there are about 95cc of air in the 1/4 inch ID shafts. A 10 foot shield point installation using 3/16 inch OD tubing has about 25 cc of void space to purge.)

Caution must be taken not to de-gas the area surrounding the slotted intake. This will occur if a pump with too high a flow rate is used, producing a vacuum that causes air to rebound when the pump is disconnected. An excessive purging volume will also encourage short-circuiting down the shaft sides.

When using analytical equipment which contains a positve displacement pump first purge the shafts. Then attach a piece of tubing between the detector and the gas connector. Purge the detector for about one minute to remove air. Proceed to take and analyze the gas sample. After each sample, flush the unit and change tubing to avoid cross-contamination. Refer to the instruction manual for the detector being used.

When sampling near the water table or in areas of high moisture, the use of an in-line condenser will prevent water from entering the detector.

If a self-purging detector, or one that has sufficient vacuum to pull a sample, is not available a sample may be injected. First, purge the system. Then remove the air pump and replace it with a 50cc or larger syringe. Draw a sample into the syringe and inject it into the detector. With a portable GC, a smaller sample is taken using a .1 to 1cc syringe. The sample is then inserted through a septum or tubing that connects to the purging pump.

Immediate analysis with a calibrated field analyzer, particularly a gas chromatograph, is preferable to later laboratory analysis due to surface adsorption by the sample container.

When it is necessary to take a contained sample, KVA recommends the use of either the KVA vapor trap in-line sampler or use the KVA Minex™ expendable syringe pump with a Tedlar bag (see Figure 1, page 6).

To use the KVA vapor trap, attach silicon tubing between the gas connector and one barb of the vapor trap. Attach another piece of silicon tubing between the second barb and the air pump. Purge the vapor trap and the system using the KVA air pump for at least 10 minutes, or the amount of time appropriate for the existing soil conditions. The vapor

sample is diverted through two hypodermic needles which pierce the top of the VOC bottle. Remove the VOC bottle from the vapor trap by pulling; DO NOT TWIST. Sample should be kept cool before analysis and analyzed within 24 hours.

To prepare for the next sample, replace the VOC bottle by pushing a clean one into the vapor trap. Additional bottles and needles may be purchased from KVA or a local scientific supply house.

To take a sample using the KVA Minex™ syringe pump and Tedlar bag, connect the inlet port of the pump to the sample source (shaft section, shield point, etc.) with flexible tubing. Purge three volumes of air from the sample line before connecting a Tedlar bag to the exhaust of the pump. With a glass or polypropelex 50cc syringe, pump to inflate the bag.

When the Tedlar bag is filled, rotate the top valve on the bag to close. Disconnect the flexible tubing and discard. Clean the mini pump with steam or alconox solution and dry with a heat gun before reuse.

WATER:

Water samples for volatile analysis can be obtained by using the KVA Water Sampling Kit (see Figure 3, page 30). Although the slotted intake can be used for taking water samples, the use of a shield point is preferred since no decontamination is necessary between samples. The slotted intake or a shield point attached to tubing is placed below the static water level (the water table) in saturated soil. The shafts are then purged of water to 6 times their interval volume. (In 10 feet of shaft there are about 95 ml of water.) The water initially withdrawn often contains silt or sediment and will pass through the sample container to the purge vial.

Immediately pour the sample into a VOC vial. Fill the vial to the top, making a concave surface of water. Carefully screw the lid onto the vial. The inverted vial should not contain air bubbles when these procedures have been followed. Each vial should be chilled and transported to a laboratory to be analyzed within 24 hours.

Water samples for nutrient analysis can be obtained with the KVA sampling system in several ways. When only small amounts of water are needed from a shallow depth, insert Teflon tubing down the shaft, place a thumb over the end of the tubing and withdraw the shaft. A peristaltic or hand pump can also be used by inserting 3/16 inch Teflon tubing down the shafts to below the water table and pumping.

RETRIEVAL AND DISASSEMBLY OF SHAFTS

Before withdrawing the shafts from the ground, remove the hammer and the adaptor. Rotate the shafts clockwise to make sure all joints are tight. The KVA retrieval jack is recommended for extracting shafts from the ground. See Page 27, for instruction on use of the KVA retrieval jack. When using the KVA jack, your own jack, or another retrieval method, make sure that the shafts always are lifted STRAIGHT UP. Exertion of any lateral force will damage the system.

To disassemble, unscrew the shaft sections using two 1/2" open end wrenches. If disassembly is difficult, tap the joint between shaft sections with a ball pean hammer while unscrewing. This should help loosen the joint. With a dampened clean cloth wipe shafts down and clean the threads.

DECONTAMINATION

If decontamination is necessary, the following procedures are suggested: Wash all parts that were contacted with any contamination using a 1% solution of Alconox mixed with hot water. Follow with a 10% methanol (analytical grade) rinse, and wipe with distilled deionized water. A small steamer designed for steam-cleaning shafts and points is available from KVA. The steamer operates with distilled water. All .22 caliber gun cleaning equipment is suitable for decontaminating the shafts.

OPERATING PRECAUTIONS

1. Do not use in wet weather or while standing in water. This is electrical equipment and should be handled with the same care as any electrical equipment.
2. Wear a hard hat.
3. Always locate all underground utilities before initiation of work.
4. If underground electrical wires are present or suspected, always ground the unit and wear heavy rubber gloves and footwear. Always take these precautions because unknown electrical utilities may exist.

APPENDIX B

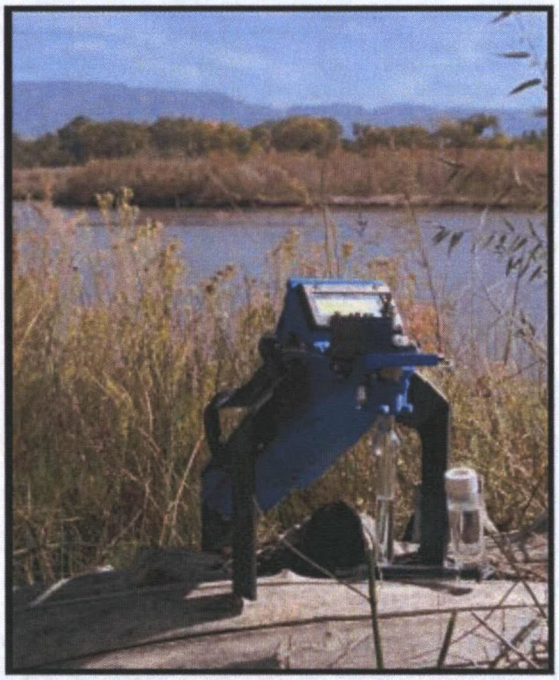
FROG 4000™
Gas Chromatography System for VOCs

Defiant Technology, Inc.
User's Manual

Insert User Manuel PDF here

FROG-4000™

Chemical Analysis System



User's Manual

Defiant Technologies, Inc.

2014 Vol.4

Graphical examples for Chlorinated Alkenes and BTEX

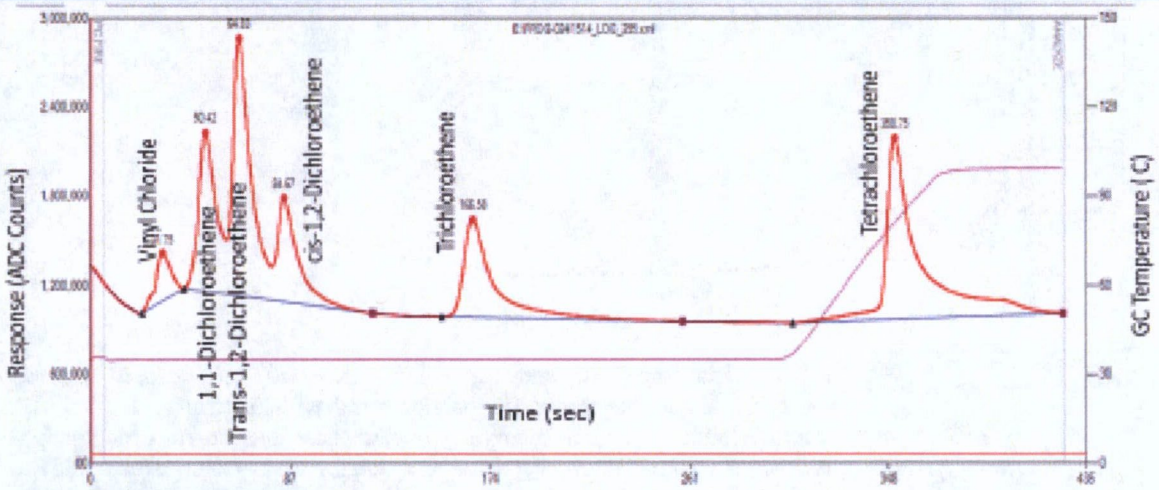
Defiant Technologies

FROG-4000

Chlorinated Alkenes Settings

FROG 4000

www.defiant-tech.com



Parameter	Value
Ta	300
Tb	60
Tc	60
Ct	40
Ht	100
Collect	30
Clean	4
Presettle	4
Settle	2
Fire	6

This application note will help you with setting the appropriate run parameters to perform an analysis of chlorinated alkenes. In addition, you can use this note to determine the correct elution order for these analytes on the FROG If you are analyzing chlorinated alkenes on the FROG-4000, the parameters on the left are the appropriate parameters. Vinyl chloride and 1,1-dichloroethene are difficult chemicals to analyze even under perfect conditions. We recommend the following. For many analytes, it is okay to drop the bottle while loading a sample when analyzing for these two compounds keep the empty sparge bottle secured to the sparge block and load the sample through the introduction valve as normal. Also, it you are collecting the water sample from a grab sampler, pour the water directly into the end of the syringe and then insert the plunger. This will minimize loss of volatile compounds.

The elution order is the order in which chemicals travel through the column. The figure at the top shows vinyl chloride eluting first and tetrachloroethene eluting last. The elution order for common chlorinated alkenes can be seen in the chromatogram above.

Helpful hint: If you want better retention and separation for the early eluting compounds, you can lower the cold temperature if ambient conditions allow. We recommend that the cold temperature be at least 5 C hotter than the ambient temperature if you If you are analyzing MTBE, BTEX, and chlorinated alkenes on the FROG-4000, you can find those parameters at www.defiant-tech.com/downloads.php.

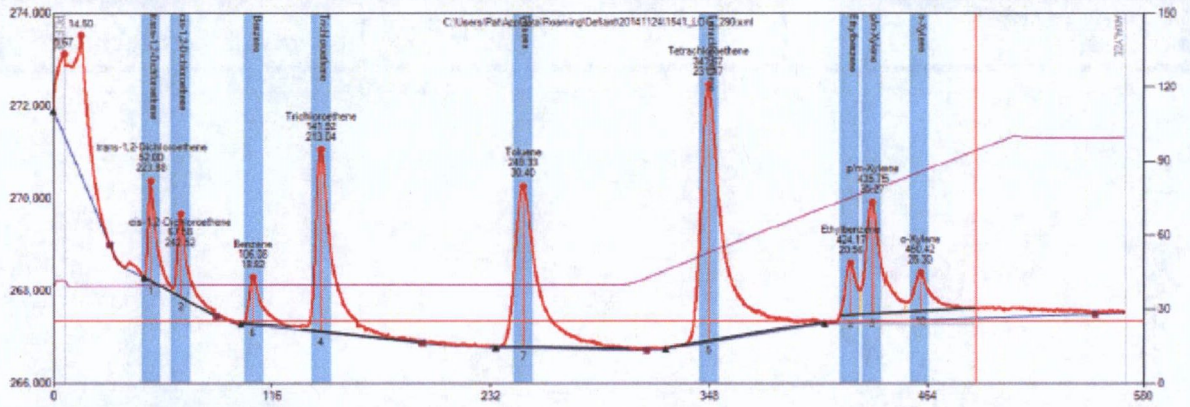
Defiant Technologies

FROG-4000

BTEX and Chlorinated Alkenes Settings

FROG 4000

www.defiant-tech.com

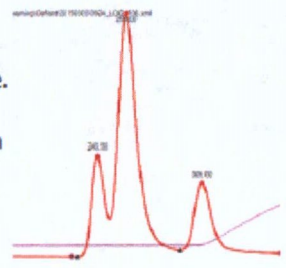


Parameter	Value
Ta	300
Tb	210
Tc	60
Ct	40
Ht	100
Collect	30
Clean	4
Presettle	4
Settle	2
Fire	6

If you are analyzing chlorinated alkenes and BTEX on the FROG-4000, the parameters on the left are the appropriate parameters. Vinyl chloride and 1,1-dichloroethene are difficult chemicals to analyze even under perfect conditions. We recommend the following. For many analytes, it is okay to drop the bottle while loading a sample when analyzing for these two compounds keep the empty sparge bottle secured to the sparge block and load the sample through the introduction valve as normal. Also, it you are collecting the water sample from a grab sampler, pour the water directly into the end of the syringe and then insert the plunger. This will minimize loss of volatile compounds.

The elution order for the chlorinated alkenes and BTEX can be seen in the chromatogram above. As you can see from the above chromatogram, p-xylene and m-xylene coelute. During calibration these two chemicals are combined under the name p/m-Xylene. Combining them means that for every calibration concentration level, their concentrations will be added together. For example, if the calibration standard contains 100ppb of p-xylene and 100ppb of m-xylene then their combined concentration as p/m-xylene is 200ppb.

Helpful hint: If you want better retention and separation for the early eluting compounds, you can lower the cold temperature if ambient conditions allow. We recommend that the cold temperature be at least 5 C hotter than the ambient temperature. Sometimes it is easier to start with the last peaks than trying to identify peaks starting with the first one. The picture on the right shows the feature that application support looks for when we are identifying the various peaks in MTBE/BTEX. Then we go backwards in elution next looking for toluene, benzene, and finally MTBE if it is present. This trio of peaks is ethylbenzene, pm-xylene, and o-xylene. The feature is distinctive in a chromatogram and can often help if peaks at the beginning are confusing.

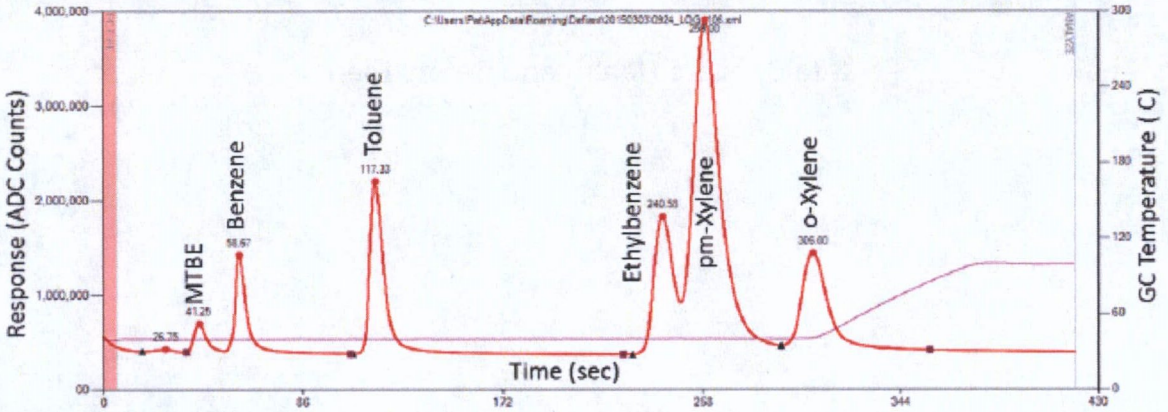


Defiant Technologies

FROG-4000 BTEX Settings

FROG 4000

www.defiant-tech.com

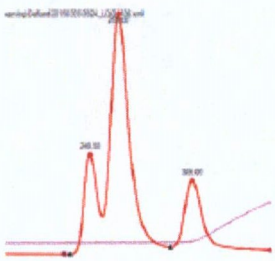


Parameter	Value
Ta	300
Tb	60
Tc	60
Ct	50
Ht	100
Collect	30
Clean	4
Presettle	4
Settle	2
Fire	6

This application note will help you with setting the appropriate run parameters to perform an analysis of MTBE and BTEX. In addition, you can use this note to determine the correct elution order for these analyte on the FROG. If you are analyzing MTBE and BTEX on the FROG-4000, the settings on the left are the If you are also looking for TCE and PCE but not more volatile chlorinated alkenes, the settings on the left will also work for you. You might ask why not have one set of parameters that work for all applications. That is certainly possible and that application note can be found on our website at www.defiant-tech.com/downloads.php. For most people having one short analysis optimized for their analyte set maximizes their productivity and economizes their time.

The elution order for MTBE and BTEX can be seen in the chromatogram above. As you can see from the above chromatogram, p-xylene and m-xylene coelute. During calibration these two chemicals are combined under the name p/m-Xylene. Combining them means that for every calibration concentration level, their concentrations will be added together. For example, if the calibration standard contains 100ppb of p-xylene and 100ppb of m-xylene then their combined concentration as p/m-xylene is 200ppb.

Hint: Sometimes it is easier to start with the last peaks than trying to identify peaks starting with the first one. The picture on the right shows the feature that application support looks for when we are identifying the various peaks in MTBE/BTEX. Then we go backwards in elution next looking for toluene, benzene, and finally MTBE if it is present. This trio of peaks is ethylbenzene, pm-xylene, and o-xylene. The feature is distinctive in a chromatogram and can often help if peaks at the beginning are confusing.



APPENDIX C

Site Specific Health and Safety Plan

SITE SPECIFIC HEALTH AND SAFETY PLAN
EXPANDED SITE INSPECTION
PHASE 1 SOIL GAS STUDY
WEST CENTRAL AVENUE, ALBUQUERQUE
CERCLIS ID # NMN000607372
BERNALLIO COUNTY, NEW MEXICO

July 2016

New Mexico Environment Department
Ground Water Quality Bureau
Superfund Oversight Section

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FIGURES

1 0 INTRODUCTION

This Site Specific Health and Safety Plan (SSHASP) was created in compliance with the New Mexico Environment Department (NMED), Ground Water Quality Bureau (GWQB) Health and Safety Program (HASP, June 2014); and the U S Environmental Protection Agency (EPA) and NMED requirements for conducting environmental field work at the West Central Avenue (Site), in Albuquerque, New Mexico, Bernalillo County, CERCLIS ID# NMN000607372 The scope of work covered by this SSHASP applies to the collection of soil gas samples during the week of July 17 through July 21, 2016

The scope of this work plan includes collection of soil gas (SG) samples from up to 50 sample points. The SG sampling points will be focused west of 9th Street and Marquette Ave at MNW-11. Target addresses include 1105 Central Ave NW, 1202 Central Ave SW, 1404 to 1408 Central Ave SW, 1433 Central Ave NW, 1503 Central Ave NW, 1601, Central Ave NW, 1701 Central Ave NW, 1816 Central Ave SW, 1837 Central Ave NW and (b) (6) Additional SG sample points will be focused along 14th St NW, Marquette Ave NW and Roma Ave NW to capture data both cross gradient and parallel to the local ground water flow direction One additional focus area at 1006 Park Ave SW will be evaluated as well The Expanded Site Investigation (ESI) sampling is designed to target Bell Trading Post (BTP) and additional potential source areas that have been identified through Albuquerque Business Directory and Sanborn Fire Insurance map reviews Additionally, the active SG sampling network will be used as a tool to potentially identify the ground water plume location in the WCA area

The SG sampling activities will be conducted in accordance with the July 2016 Work Plan, NMED GWQB Superfund Oversight Section (SOS) Quality Assurance Project Plan (QAPP) (NMED, March 2016), and NMED SOS Standard Operating Procedures (SOPs) Manual (NMED, July 1999), for soil gas sampling. All field activities will be documented in the Site log book. Each SG sample will be collected utilizing the Macho Hammer Drill SG sampling system linked to Tedlar sample collection bags within a vacuum box Laboratory control samples will be collected using 1 liter mini-summa or 5 liter Summa canisters. Field parameters will be measured and daily local barometric air pressure and temperatures will be recorded from the Albuquerque International Airport NOAA site http://w1 weather.gov/obhistory/KABQ.html by NMED SOS. All reusable equipment used for SG measurements and sample collection will be decontaminated prior to use in each well Decontamination procedures include cleaning with steel brush, and soap (Liquinox) wash followed by a deionized water rinse. Limited external decontamination of the hammer drill parts is expected because all soil gas collection will be collected with dedicated drill tip, collection tubing, Tedlar bags, and Summa canisters This SSHASP is included in the July 2016 Work Plan as Attachment C.

This SSHASP will be read, acknowledged by signature, and followed by all NMED staff that are assigned to perform work at the Site NMED personnel will be given a safety briefing prior to accessing the Site and sign an acknowledgement form that they have received the safety briefing From Section 4 of the NMED GWQB HASP, if one of the components is not applicable to the specific field event, the section shall remain in the SSHASP and a statement made that the section is not applicable to the field event indicating that it was considered

2.0 KEY PERSONNEL AND HAZARD COMMUNICATION PLAN

Martyne Kieling will serve as the Field Team Project Leader (FTPL) and Angelo Ortelli will serve as the Field Team Health and Safety Leader (FTHSL). The FTPL will be responsible for leading the performance of the ground water sampling while the FTHSL will be responsible for ensuring compliance with the SSHASP and the NMED GWQB HASP. Martyne Kieling, Angelo Ortelli, Al Pasteris, Sabino Rivera, Steve Jetter, Mark Garman, and Justin Ball will comprise the NMED field team to complete the task The NMED Staff will be operating the hammer drill, generator, vacuum box/SG Tedlar collection system, Summa SG collection, and operation of the FROG-4000^{tm} Gas Chromatography System. Each field person on site will have a mobile phone to keep in communication. The FTHSL will conduct a safety briefing prior to the commencement of work each day

3.0 HEALTH AND SAFETY RISK ANALYSIS

The NMED GWQB HASP Field Work Job Hazard Analysis (JHA) sufficiently addresses the proposed field work. The SG sampling is anticipated to encounter trichloroethylene (TCE), cis-1,2-dichloreoethene (cis-1,2-DCE), trans-1,2-dichloreoethene (trans-1,2-DCE), PCE (tetrachloroethylene), and vinyl chloride (VC) Additionally some drilling locations are in close proximity to former gas station locations so there is a potential for encountering benzene, toluene, ethylbenzene, and xylene (BTEX) The primary potential route of exposure to chemical hazards would be dermal through contact with the drill stem and soil which can be avoided through proper use of personal protective equipment (PPE) Inhalation contact is not expected with contaminants due to low concentrations that are expected SG samples will be drawn under vacuum and collected within a sealed container.

Physical hazards include automobile traffic on Central Avenue and side streets as well as within parking lots of active business. Appropriate arrangements will be made when work must be performed within the right-of-ways of the highway or roads such as the use of high visibility traffic cones, hazard signals, flashing lights, barriers, and vests to provide adequate notice of work. No work is planned on Central Avenue. Slip, trip, and fall hazards; uneven ground, snakes, insects, pedestrians, stray dogs and thorny vegetation are additional physical hazards. Operation of the generator and drill involves electrical, hot surface, and pinch point hazards Operation of the lift gate involves potential pinching and crushing hazards Safety glasses will be worn at all times. The field team shall remain cognizant of their surroundings to try and avoid such physical hazards

Weather conditions may expose personnel to extremes of heat or cold The physical hazards of heat include heat stress, heat exhaustion and heat stroke Heat stress can cause rashes, cramps, discomfort, and dehydration Heat stroke may result if the individual is not treated The use of personal protection equipment (PPE) can increase the risk of heat stress To guard against heat stroke, workers will be encouraged to drink more than the amount required to satisfy thirst and a work regimen will be established that provides adequate rest periods for cooling down. When working in heat, all breaks should be taken in a shaded rest area When working in cold weather, breaks should be taken indoors when workers feel that they need to warm themselves Cold weather at this time of year is not expected. Should conditions exist where field personnel feel

unsafe, personnel may leave the work area and must report the unsafe condition to the FTHSL so that other field personnel may also evacuate

4 0 SITE CONTROL MEASURES

Dermal contact with contaminated soil during sampling can be avoided through the proper use of PPE (nitrile gloves) In case of contact or as a precaution, the field team shall thoroughly wash hands with soap and water before eating or drinking as to avoid hand to mouth contamination. Always wash hands before leaving the site

The work zone shall consist of the immediate vicinity of each soil gas bore hole that is being drilled and accessed for sampling. The field team will be adhere during all activities to maintaining the buddy system. Site maps of the well locations are included in the ESI Work Plan July (2016).

The nearest medical assistance can be obtained from the first aid kit in the State vehicle Should the need for medical care arise, Presbyterian Hospital can be reached at (505) 841-1234, and is located at 1100 Central Ave. SE, Albuquerque NM 87204. Directions from the Site and additional emergency contact information are presented in Section 12 of this HASP.

5.0 TRAINING ASSIGNMENTS

No special training is required for the Site work. Required training for this effort includes initial Hazardous Waste Operations and Emergency Response (HAZWOPER) training, a current 8-Hour HAZWOPER Refresher, and a current Defensive Driving Certificate. Angelo Ortelli, the FTHSL, has confirmed that the key personnel are current with the required training.

6 0 MEDICAL SURVEILLANCE REQUIREMENTS

Angelo Ortelli, the FTHSL, has confirmed that the key personnel are current with the GWQB HASP medical monitoring requirements.

7.0 PERSONAL PROTECTIVE EQUIPMENT

Level D PPE is required for the Site field activities Required PPE consists of steel toe boots, chemical resistant gloves, safety glasses, knee pads, and visibility vests. Sun protection, in the form of sunscreen or protective clothing, is recommended Work gloves will be used to protect hands from abrasion during drilling Much of the work will be staged on the ground such that knee pads are recommended.

8 0 AIR AND EMPLOYEE MONITORING

This section is not applicable to the ground water and soil sampling event, but it was considered during preparation of the SSHASP.

9 0 SPILL CONTAINMENT PROGRAM

This section is not applicable to the soil gas sampling event, but it was considered during preparation of the SSHASP.

10 0 CONFINED SPACE PROCEDURES

This section is not applicable to the soil gas sampling event, but it was considered during preparation of the SSHASP.

11.0 DECONTAMINATION PROCEDURES

Decontamination procedures for the drill stem or other reusable equipment include dry brushing, soap (Liquinox) wash followed by rinse with deionized water after use in borehole. Chemically resistant (nitrile) gloves can be used during the decontamination process In case of dermal contact, field personnel should thoroughly wash the affected area with soap and water It is not anticipated that decontamination water will be above regulatory limits and will be disposed of on-site according to site protocol

12 0 EMERGENCY RESPONSE AND HAZARD COMMUNICATION

If a threatening weather situation develops (i e thunder and lightning), field personnel will retreat to their vehicles or to nearby shelter as quickly as possible following proper decontamination procedures. However, if a threat to life is imminent, the retreat will be immediate

If a worker is injured at the site, first-aid assistance will be rendered by trained NMED staff and/or will be transported to the nearest hospital immediately if warranted. Should a severe physical injury requiring emergency treatment, and transport to a hospital by a coworker may not suffice, the Hospital and Ambulance will be called immediately. First aid kits will be available at the site for immediate treatment of injuries The FTPL is also responsible for documenting the situation, the response actions taken

Presbyterian Hospital can be reached at (505) 841-1234, and is located at 1100 Central Ave. SE, Albuquerque, NM 87106 Directions from the Site Source Area vicinity are· From Central Ave SW, site vicinity, drive east on Central Avenue for about 1 9 miles, crossing under Interstate 25 Turn south (right) into the Presbyterian Hospital Emergency entrance Map to Presbyterian Hospital is included on page 7 of this SSHASP Additional emergency contact numbers are included in Table **1**

13 0 EMERGENCY CONTACT INFORMATION

Table 1 - Emergency Contact Information

Presbyterian Hospital: 1100 Central Ave. SE Albuquerque, NM 87106	(505) 841-1234	
Toxic/Hazardous Materials Albuquerque Fire Department	(505) 624-6800	(911 if emergency)
Hazardous Waste Bureau 24 hour Emergency number:	(800)-219-6157	
Albuquerque Fire and EMS	911 if emergency (505) 768-9317	
Police, Albuquerque	(505) 242-2677	(911 if emergency)
State Police	(505) 841-9256	(911 if emergency)
Poison Control Center	(800) 222-1222	(911 if emergency)
NMED/GWQB (Santa Fe)	(505) 524-2918	
Site FTHSL (Angelo Ortelli)	(505) 827-2866	Cell – (505) 501-5611
Site FTPL (Martyne Kieling)	(505) 827-2340	Cell – (505) 795-4895

14.0 SIGNATURE PAGE

I have been briefed on safety for the West Central Avenue Site, Site Health & Safety Plan

Signature	Printed Name	Date
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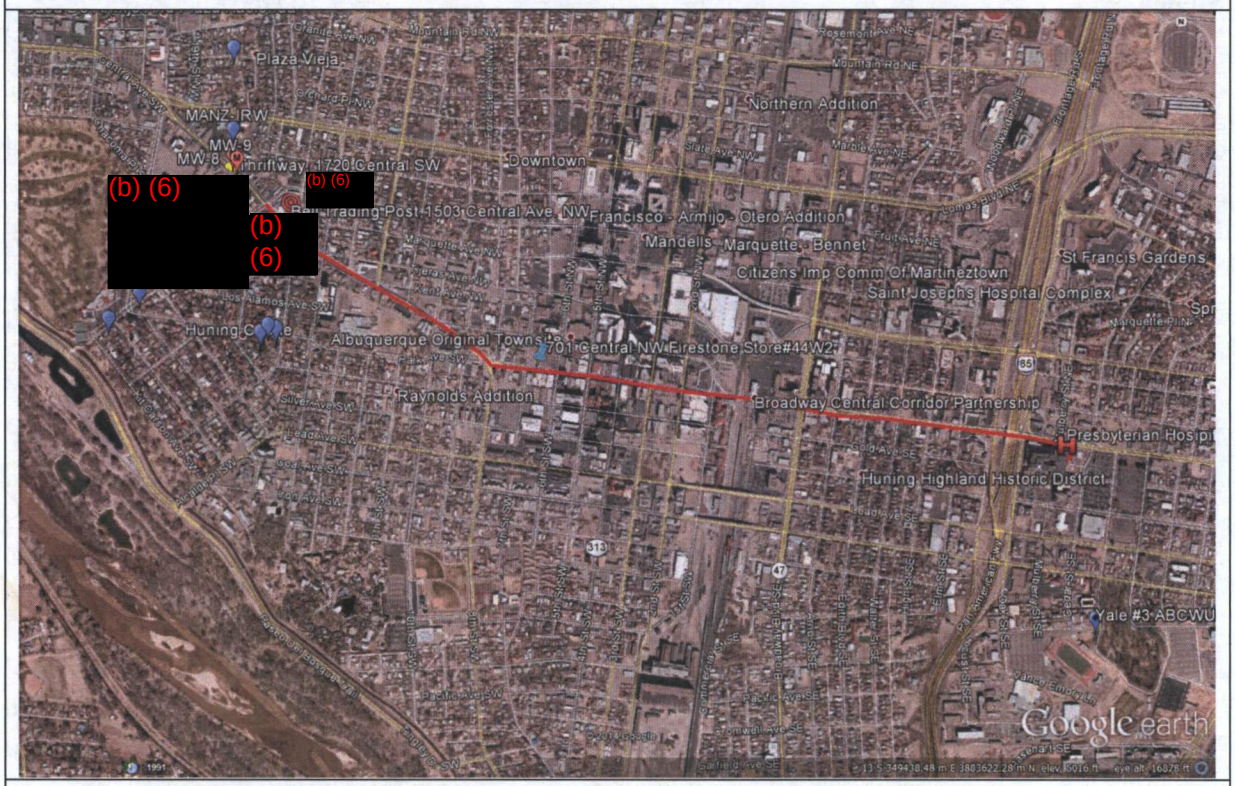
Figure 1 - Map Route to Presbyterian Hospital, Albuquerque New Mexico

Presbyterian Hospital
1100 Central Ave. SE,
Albuquerque, NM 87106.

Phone: (505) 841-1234



Driving Directions from West Central Avenue Site:
Drive east on Central Avenue for about 1.9 miles, crossing under Interstate 25.
Turn south (right) into the Hospital Emergency Entrance.